

### **India-Philippines to cooperate in agricultural biotechnology**

India has handed over the foundation seeds of improved varieties of peanut and sweet sorghum to the Philippines for better production and processing of the output. The International Crop Research Institute for Semi-Arid Tropics (ICRISAT) in India developed these varieties. One of the peanut varieties, ICGV 86564, has been commercialized in some parts of India and has been of large benefit for farmers. During the recent visit of the President of India to the International Rice Research Institute (IRRI), Philippines, an MoU between the two countries on agricultural biotechnology cooperation was signed.

The two countries have also launched joint work in rice production and processing in which the Philippines a based IRRI has comparative advantage. India would be interested in the development of new, nutritionally enhanced rice varieties. New impetus is being planned for the ongoing IRRI-India collaborative effort programme to develop drought-tolerant varieties that are expected to have a substantial impact on increasing productivity and reducing poverty in Eastern India. India has around 176 million hectares of land currently available for cultivation, which by 2020, would reduce to 100 million hectares. The other areas of cooperation include, dry land farming, multiple cropping, bio-organic farming, agriculture machinery horticulture, cotton growing technology, sugar technology, integrated pest management and plantation crops. There was a proposal to enhance India's support for IRRI's research – which currently averages about US\$150,000 a year.

### **Decline in new agri-biotech product applications in US**

The approved biotech crop for commercialization in the US has decreased significantly in product commercialization from 1995 to 2000. And it decreased by two thirds in the number of applications filed

since the year 2000. The trend of decline in this technology was due to the lack of an efficient review process and adoption, stream lined public investment, risk assessment and safety studies, evaluation of farmer's need and the improvement of public acceptance for this technology. These issues were revealed in a study report by Centre for Science in Public Interest (CSPI), a Washington based non-profit education and advocacy organization that focuses on food safety and nutritional issues,

### **Biofuels could supply 30 per cent of global energy demand**

The scientist from Georgia Institute of Technology, published a paper on 'The path forward for Biofuels and Biomaterials', in the *Science Journal*, whereby they recommended a multidisciplinary integration of perspectives by combining the approaches of biologists, agronomist, engineers, energy experts and policy specialists to achieve the transition from non-renewable carbon resources to renewable resource energy. Energy demand was projected to almost grow 50 per cent by 2025 with the increase in demand from developing countries. The developing countries economic growth could be mapped with the increase in demand for biofuels. Dr. Arthur Ragaukas and colleagues of the Institute highlighted the future energy challenges to convert biofuels into practical cost efficient alternatives to petroleum products. In their report, several countries plan to increase of biofuels for transport. A country like the US has plans to replace 30 per cent of liquid petroleum with biomass derived products by 2025; India has a targets to increase 5 to 20 per cent by 2012; European Union target to extract 6 per cent of fuel from biomass while Brazil has been producing highest amount of around 30 per cent of transport fuel derived from biomass. They analyzed the range of material used in biofuel production to include low cost agriculture wastage products, fast growing trees and perennial energy crops such as switch grass. The ground challenge for biomass production is to develop crops with physical and chemical traits to increase the biomass yields.

### **Greater Mekong sub-region countries promote agriculture ties**

The regional programme on rural agriculture was initiated by the Greater Mekong Sub-Region (GMS) member countries at Thua, Thien-Hue, Vietnam. The strategic framework of the programme included development in agriculture and cooperation in trade and investment, scientific and applied technology research and use of natural resources

and environmental protection. The Asian Development Bank (ADB) has been funding this programme since 2003 for the GMS Member countries like Vietnam, Laos, Cambodia, Thailand and Yunnan Province of China.

### **ICRISAT and CII partnership for agriculture rural development**

The International Crop Research Institute for Semi-Arid Tropics (ICRISAT) and Confederation of Indian Industry (CII) are working together on improvement of natural resource management for sustainable agriculture. This initiative was aimed to strengthen partnership with the private sector through 'the Agri Science Park' Programme. The collaborative and strategic alliances will help private sector organizations to mobilize cutting edge S&T cooperation for the poor people in semi arid tropics of Asia and Sub-Saharan Africa.

### **Co-existence of GM and non-GM crops**

The European Union's Joint Research Centre has recently published case studies to identify how farmers can reduce the unintended and unavoidable presence of GM material in non-GM harvests. This collaborative research was taken up by the following institutes: Francis Institut National de la Recherche Agronomique (INRA); Germany's University of Applied Sciences of Weihenstephan; European Commission's Institute for Prospective Technological Studies (IPTS) the Joint Research Centre (JRC) came out with these issues of the coexistence of GM and non-GM crops in EU's agriculture system.

In the report, they identified the agronomic performance necessary for the coexistence in the introduction of biotech crops. It was also based on the efficacy and feasibility of coexistence measures and the need for long-term effects of implementation of GM crops. The case studies covered crop and seed production of maize, sugar beet and cotton and their threshold values. The studies examines the issue on a regional scale through simulation using data on EU agriculture landscapes, weather conditions and agricultural practices. The main conclusion from the case studies was that crop production at the 0.9 per cent threshold set by EU is feasible with few or no changes in agriculture practices, if adventitious GM presence in seeds does not exceed 0.5 per cent. The production seed of up to 0.5 per cent GM seed would be possible with little or no change in the current seed production practices.

### **CSIRO developed new wheat for improved digestion**

The Australian Commonwealth Scientific and Research Organization (CSIRO) developed a new variety of experimental wheat with altered starch composition that could help in the improvement of public health. Dr. Mathew Morel, a leading scientist, works on the RNA interference (RNAi) through the gene silencing method. According to Dr. Morel, "In this technique, a gene construct carrying a fragment of a target gene cloned in both orientations is transformed into a host plant. When the double stranded RNA expressed, the homologous mRNA degradation takes place. And this process helps the plant to defense against the viral attack. Through the RNAi to reduce the expression levels of two starch branching enzyme to get 70 per cent amylose, instead of the 25 per cent present in standard wheat through a molecular marker, which will help in animal growth rate".

### **Biosafety violation in GM food crop trial in India**

The Centre for Sustainable Agriculture (CSA), a Hyderabad-based organization, presented an evidence of biosafety violation in GM food crop trials of brinjal and rice varieties in the Andhra Pradesh State of India. In their report, the CSA complained of gross violations of the Environmental Protection Act (EPA Act) and absence of liability and a monitoring mechanism of Genetic Engineering Approval Committee (GEAC) of the Ministry of Environment and Forest (MOEF), Government of India. However, the CSA also uncovered a violation of biosafety in the Bt bhindi field trial being conducted by Mahyco at Guntur district of Hyderabad. The report was also presented to the Monitoring and Evaluation Committee (MEC) of GEAC for appropriate action. The GEAC also admitted that, it had no information on where trials are going on in the country. "India is yet to decide a coherent and publicly debated policy on whether GM food crops are needed and what are the risk associated with it," said the Executive Director of CSA.

### **Germany passed third GM amendment law**

The German Parliament passed the new law, which regulates application, proceeding, processing deadlines and monitoring rules of GMOs. Parliament also finally accepted the EU-GM guideline with elaborate regulation concerning GM crops and unintentional release of transgenic organisms. This Third Amendment Law focused on existing law and

issues concerning fixing of liability due to transboundary movement of GMOs. Before amendment of this law, German government commercialized GM maize of MON810 varieties in 1500 hectares of land. But, there was an immense pressure from farmer communities for the liability and redress issues in GMOs.

### **South-South research partnership on desertification**

The countries of Central and West Asia and North Africa (CWANA)-plus partnership have promoted scientific collaboration between the Middle East, North Africa and Central Asia to boost research on desertification. This partnership was initiated by United Nation University (UNU) and International Centre for Agriculture Research (ICRI), Syria to train scientists and for sharing the resources and expertise. The degradation of dry land and livelihoods is a major cause of concern for these countries. The partnership was aimed to conduct research and promote practical ways for tackling desertification and the protection of livelihoods.

According to the China State Forestry Department, nearly one-fifth of China's total area is covered with deserts that could have an impact on agriculture and human settlement in future. The government has announced a 'desert control scheme' with private sector involvement for a tree planting project. "The most important task is to work out robust research-based plans to meet the specific demands of each element of the desert control battle," said Wang Tao, Director of the Cold and Arid Regions Environmental and Engineering Research Institute in Lanzhou.

### **AIDS R&D centre opens in Cameroon**

The international partnership led by UNESCO opened a HIV research centre in Yound'e, Cameroon. The centre would run clinical trial of vaccines to protect babies from getting HIV from their mothers while breastfeeding. According to World Health Organization report, breastfeeding could account for up to half of HIV infections in infants and young children, where the practice is prolonged. The centre also worked on HIV/AIDS diagnosis, research and training for the researcher in that region with the collaboration of the Italian Health Ministry, European Union, UNESCO and the Government of Cameroon.

### **Vietnam approves major fund for GM crop research**

The Government of Vietnam approved \$63 million over the next 15 years on agriculture biotechnology. The investment will support applied research, technology development and human resources. The aim of the programme was to create more varieties of plants, microorganisms and agricultural products with higher qualities and improving GM varieties.

The Ministry of Agriculture and Rural Development (MARD) has planned to carry out 12 scientific research and pilot production projects through the recently approved “Key Programme on Development and Application of Biotechnology in Agriculture and Rural Development Through 2020”. Under the programme, the ministry will build capacity by: training scientists; technical infrastructure; international cooperation; effective implementation of advanced biotechnologies; and the promotion of R&D projects. The programme aims to encourage technology transfer, form a favourable market, and promote the formation and development of the biotech industry in agriculture. The government has planned to increase the proportion of biotech crops to 70 per cent of the country’s total crop area by 2020.

### **Bangladesh to formulate National Biotechnology Policy**

The Government of Bangladesh is planning to adopt a National Biotechnology Policy (NBP) and National Biosafety Framework (NBF) by the end of the year, which aims the application of genetic modification in crops, livestock, risk free environment and human health. The National Executive Committee (NECB) will be responsible for the implementation of the national policy to ensure speedy and better development of technology. It also set a plan of 20 years to keep pace with R&D in biotechnology and genetic engineering. Under the draft policy, government plans to set up a biotech incubator, venture capital fund, and bank credit for biotech companies. In the policy, the intellectual property right, biosafety, biosurveillance and bioethics issues are included to emphasize on knowledge, innovation and indigenous practices. Presently, Bangladesh has four varieties of GM drought resistant and saline tolerant rice, late blight of potato, fruit and shoots borer resistant chickpea. The Bangladesh Rice Research Institute (BRRI) and Bangladesh Agriculture Research Institute (BARI) are testing the GM rice and eggplant in a green house environment before releasing for commercialization.

Bangladesh was signatory to Cartagena Biosafety Protocol (CBP) but there was lack of guidelines to adopt GM crops. The NBF will work with the collaboration of Global Environment Facility (GEF). The Agriculture Biotechnology Support project II (ABSP II) funded by United States Agency for International Development (USAID) and Cornell University, USA has been supporting its biotechnology research and management in public and private partnership among institutions to develop GM crops. The project aims to boost food security, economic growth, nutrition and environmental quality in Asian and East and West African countries.

### **United States to decode soybean gene to increase biodiesel production**

The United States Department of Energy (DoE) and Department of Agriculture (DoA) has collaborated to decode the DNA of soyabean for the production of biodiesel fuel through the genomic sequence. "The agreement of the joint research programme will support the high quality of genomic research and integration of projects to meet the country's challenge in agriculture and energy. The coordination of genome sequencing is run by Joint Genome Institute's Community Programme," said Dr. Ari Patronos, Associate Director of US Science for Biological and Environmental Research with the support DoE.

According to DoE report, *Glycine max* (soyabean) is one of the valuable legume crops and is also a source of biodiesel with environmental friendly energy. In 2004, over 3.1 billion bushels of soyabean were grown in 75 million acres with an estimated annual value of that income exceeded \$17 billion. The Joint Genome Institute of California played a key role in the transnational genomic, which is applied for DNA sequencing for the development of new avenue of clean energy generation and crop improvement.

### **Central Committee for food standards recommends labelling in GM foods in India**

An expert committee on GM food and ingredients constituted by the Indian Council of Medical Research (ICMR) has made recommendation to the Central Committee for Food Standards (CCFS) for mandatory labelling GM food products. The CCFS, which is a statutory body under Prevention of Food Adulteration Act 1954, Government of India, recommended the mandatory labelling of all GM food products.

India is a large importer of soyabean oil (believed to be crushed out of GM soyabean) and it is estimated that 20 lakh tons of Soya oil are imported by India in 2005. Since 2002, India has removed its quantitative restriction on imports and there has been a gradual reduction of import tariff with a large influx of food and ingredients from abroad. There is also commercialization of Bt cotton, where the country produces GM cottonseed oil and cottonseed cake/extraction (animal feed). But neither cotton nor the derivative products are marketed as a transgenic variety. For neither imported food products nor for domestic produce does labelling take pace.

### **United States and Brazil agreement on GM labelling**

The United States accepted the Brazilian proposal on international labelling on GM foods. In the US, Alaska is one of the states to pass labelling for genetically engineered foods. This legislation may help the US Federal government to introduce mandatory labelling. Both the countries agreed to host headquarters of the Committee on Additives and Contaminants, which transferred to Brazil, because there was no Codex Alimentarius committee in developing countries. "It will be helpful for Brazil, as a developing country to coordinate the committee its importance in determining pesticide use limits, which have a major impact on world food trade," said a Federal Agricultural Inspector in the Ministry of Agriculture of Brazil.

Since 2003, Brazil has joined the Cartagena Protocol as a signatory country in favour of a label stating: 'May Contain Modified Live Organisms.' The majorities are opposed to a label stating 'Contains Modified Live Organisms,' because that would require the adoption of expensive crop detection and tracking procedures. Brazil has a committee to look after the segregation of GMO from conventional grains and set up GMO labelling and testing procedures within four years. Until that time, "may contain GMOs" will be used on GMO exports. Although the US has not ratified the protocol, it has expressed concern over its effects on global trade in agricultural commodities.

### **Japan and Brazil exchange on plant derived ethanol**

Japan and Brazil would cooperate to promote plant-derived ethanol fuel with the help of private sector initiative. This agreement was set up in the first ministerial-level working group meeting in Tokyo. The cooperation between the two countries will look into the reduction of

carbon dioxide emission of the green house effect. The ethanol-derived plant releases only carbon dioxide, which will be absorbed by the plants. This joint venture, Brazil-Jan Ethanol Company will serve the ethanol sales agency in Japan. The Petroleum Association of Japan (PAJ), an industry group of wholesalers, plans to introduce about 360,000 kl of plant-derived ethanol to enable Japan to achieve the goal of the Kyoto Protocol in the fiscal year 2010.

Brazil, the largest producer and exporter of ethanol in the world, produces around 15 million kilolitres of ethanol from sugar cane annually. The Japan Alcohol Trading Company and Petroleo Brasileiro S. A. (Petrobras), a Brazil oil company set up a joint venture to import alcohol made from sugarcane from Brazil to Japan. According to PAJ, the direct mix of plant derived fuel with gasoline may cause harm to the environmental standards of Japan, so they preferred to promote information sharing on the ethanol-derived plant.

*(Sources: RIS based on Crop Biotech, 10 Feb. 2006; Crop Biotech, 10 Feb. 2006; Crop Biotech, Feb.2006; Crop Biotech, 03 March 2006; Crop Biotech, 03 March 2006; Crop Biotech, 03 March 2006; Crop Biotech, 03 March 2006; GM Watch, 06 March 2006; Crop Biotech, 10 Feb. 2006; SciDev.net, 02 March 2006; SciDev.net, 01 March 2006; Crop Biotech, 03 March 2006; Crop Biotech, 03 March 2006; SciDev.net, 02 March 2006; Crop Biotech, March, 2006; Crop Biotech, 18 Jan. 2006; Business Line 08 Dec. 2005; Crop Biotech, 10 March 2006; Crop Biotech, 10 Feb. 2006; Crop Biotech, 09 Feb 2006; Crop Biotech, Aug, 2005,TMC net, 10 April 2006).*